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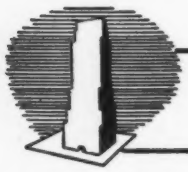

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VOLUME XLVIII MAY, 1949 NUMBER 5

EL SALVADOR
A GEOGRAPHIC RECONNAISSANCE

CURTIS M. WILSON
University of Toledo

LOCATION AND EXTENT

El Salvador,[1] located in the Tropics on the south coast of Central America (13°8′-14°24′ N. Lat.; 87°39′-90°8′ W. Long.), occupies nearly a mid-position between the Mexican-United States border and that separating Colombia and Panama (Fig. 1). It is delimited on the south by the broad expanse of the Pacific Ocean, on the west by Guatemala, on the north by Honduras, and on the east by Honduras and the Gulf of Fonseca, the latter separating El Salvador and Nicaragua. Unlike the other Central American republics, El Salvador does not have frontage on both the Pacific and the Caribbean, a condition of major significance to the country's past and future development.

The Republic, slightly more than one-half the size of West Virginia, is second smallest of the Latin American republics and covers an area of 13,176 square miles, including several small dependent islands in the Gulf of Fonseca. Rectangular in shape, the country has a length from west to east of approximately 160 miles and a north-south width averaging 60 miles. The coast line, nearly 175 miles in extent, has only slight indentations from the mouth of Río Paz to that of Río Goascorán, except in the case of the Bay of Jiquilisco and the Gulf of Fonseca. In spite of its small areal

[1] The area now comprising the Republic was conquered in 1524-1525 by Spanish conquistadores under the leadership of Pedro de Alvarado. Like other parts of Central America, the territory was eventually placed under the Captaincy-General of Guatemala. Nearly three centuries of Spanish rule brought little improvement to the fortunes of the people, the area remaining both isolated and neglected. In 1821 El Salvador declared its independence from Spain and in 1841, its freedom from a then decadent Central American Federation.

dimensions, El Salvador offers a splendid variety of landscapes, both physical and cultural. The more prominent features consist of low-lying coastal and river plains; rolling hills and mountain ranges; highlands and valleys; volcanic peaks and crater lakes;

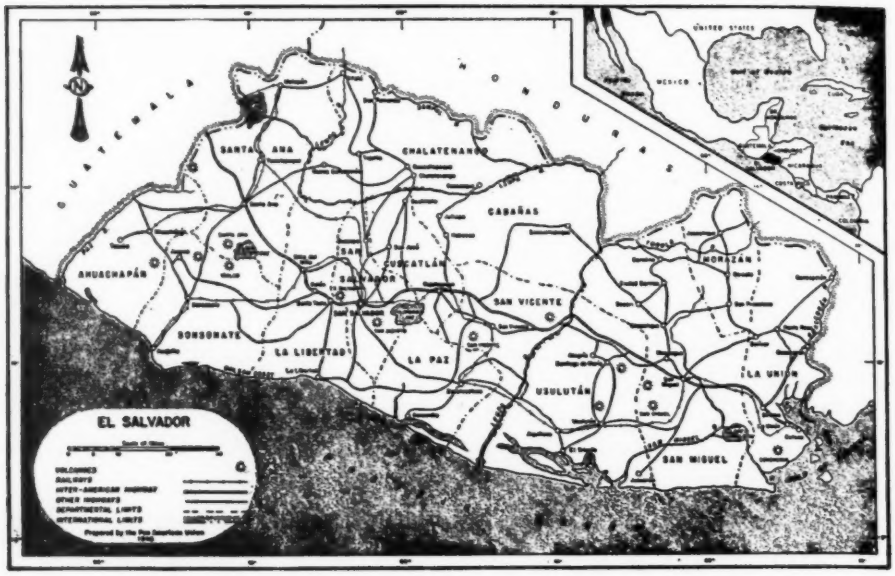

FIG. 1. Map of El Salvador. (Courtesy of the Pan American Union)

widely cultivated farms and plantations; and urban centers which vary from small, rather insignificant but picturesque Indian villages to attractive modern cities.

PHYSIOGRAPHY

Four distinct physiographic regions are discernible, namely (1) the Pacific littoral, (2) the southern or coastal mountain ranges, (3) the plateau or intermontane region, and (4) the northern cordillera. The Pacific littoral varies in width from ten to twenty miles and is broken into segments from Acajutla southward to the mouth of the Río Lempa by tongues of lava which extend to the coast from the highland mass. Prominent features of the coast line are two headlands, Punta Remedios and Punta Mala, the Bay of Jiquilisco and the Gulf of Fonseca, the latter offering the most strategic harbor between San Francisco and the Panama Canal.

The coastal belt is backed by a volcanic-formed highland extending the full length of the Republic in a general west-east di-

rection. The southern and northern edges are surmounted by two nearly parallel mountain chains which send out numerous spurs across the plateau, in some instances bordering basins of exceptionally high fertility. None of the mountain peaks rise to heights in excess of 8000 feet but stand out prominently above the surrounding countryside. The highland, occupying most of the Republic and experiencing rather pleasant climate due to increased elevation over the lowlands, may well be considered the *Heart of El Salvador.* A structural depression crosses the highland from northwest to southeast with a tilt in the same direction and is drowned in the southeastern extremity by the Gulf of Fonseca. El Salvador's largest river, the Lempa, occupies this depression for considerable distance and has developed a broad valley in the northern part of the country; in cutting an exit across the highland to the Pacific it follows a rather tortuous course. The plateau is also dissected by numerous small rivers which, in some instances, have carved basin-like areas with elevation in the neighborhood of 2000 feet. The mountains along the northern highland edge tend to merge with ranges in southern Honduras.

The two mountain chains are well studded with both dormant and semiactive volcanoes numbering no less than twenty; these tend to form pronounced clusters which usually encircle crater lakes, such as Ilopango, Güija and Coatepeque. Formed chiefly of plutonic materials the coastal ranges contain the greatest number of volcanic cones and of these the best known is Izalco (Fig. 2), located near the town of Sonsonate. About every twenty minutes Izalco emits flashes of fire which are often seen for as much as fifty miles at sea. Such a characteristic display of fire has won for it the name *Lighthouse of Central America.* Santa Ana, also located in the western part of the Republic, is the highest volcanic peak with an elevation of 7828 feet. Other well-known volcanoes are San Salvador, San Vicente, and San Miguel. Partially as a result of volcanic activity, the country is subject to frequent earthquakes, a few of which have caused extensive damage and much loss of life; the more destructive tremblors are most likely of tectonic origin.

DRAINAGE

El Salvador's extensive drainage pattern results from rather heavy annual rainfall. Of the many streams the Lempa is by far

the largest and most important; no other river south of the Colorado in the United States to the tip of South America is as large. Rising in the bordering republics of Guatemala and Honduras, the Lempa enters El Salvador in the northwestern corner near the town of Citalá and follows somewhat of a southerly course

FIG. 2. Izalco's smoke plume is a distinguishing feature of the volcano.
(Courtesy of the Pan American Union)

to the Santa Ana vicinity. The stream then turns eastward and continues in an easterly direction to the El Salvador-Honduras boundary where it again changes its course, taking a sinuous southerly-southwesterly route to the Pacific and terminating in a deep, sandy estuary. Some sections of the river are navigable for small boats but it is doubtful that much use will be made of this feature because of the Republic's rapidly expanding all-weather road pattern. The Lempa Valley is highly scenic, particularly those parts bordered by rugged hills and mountains.

Río Grande de San Miguel, ranking second in importance, drains much of the eastern part of the country. Two streams of political significance are the Paz and the Goascorán. The former, marking in part the El Salvador-Guatemala boundary, drains much of the western section of the Republic and empties into the Pacific. The Goascorán flows into the Gulf of Fonseca and separates the Salvadoran Republic from Honduras on the east. The remain-

ing streams are of only local significance. The river valleys are usually of high fertility and play an important role in the agricultural economy.

Several large lakes dot the landscape. They have a northwest to southeast trend and in that order are as follows: Güija, which drains into the Lempa and is shared with the Republic of Guatemala, Coatepeque, Zapotitán, Ilopango, Jocotal, and Camalotal, the latter draining into the Grande de San Miguel. All are navigable for small boats and in addition Ilopango has served as a minor seaplane base.

General Climatic Characteristics[2]

The climate varies from tropical and semitropical to temperate, a condition largely due to the country's location in the Tropics, its proximity to the Pacific Ocean, and substantial differences in elevation. There are only two seasons, the *rainy,* extending from May to October and spoken of as winter, and the *dry,* lasting from November to April and referred to as summer. For the country as a whole cool weather coincides with the dry season and warm weather with the rainy.

Annual precipitation probably averages in the neighborhood of seventy inches with humidity normally high during the rainy season. The 1912-1942 records for San Salvador show that relative humidity varies from a high of 83 per cent for September to a low of 67 per cent for February and March, with a yearly mean of 74 per cent. Rainfall, as recorded at San Salvador from 1912 to 1942, has varied from a low of 49.8 inches for the year 1930 to a high of 89.9 inches for 1927; within this same period the average annual mean was 71.6 inches (Fig. 3). At San Salvador precipitation occurs on an average of 120 days each year, the number of rainy days varying from 95 in 1912 to 139 in 1924 and 1936. Some rainfall occurs each month but during the dry season only about 7 per cent of the yearly precipitation total is received. As a result livestock, crops, and native vegetation suffer greatly; the scarcity of water also causes considerable hardships to both rural and urban people.

Temperatures are relatively constant thruout the year for any given section of the Republic, the most striking differences occurring with changes in elevation. For the country as a whole the

[2] Climatic data, except in the case of San Salvador, is generally lacking.

probable range is from about 50°F. to around 100°F. The 1912-1942 records for San Salvador show a monthly maximum of 94.6°F. (March) and a monthly minimum of 58.8°F. (January); the annual mean during the same period was 73.5°F. In the higher parts of El Salvador frost may occur but only upon rare occasions. During July and August atmospheric conditions are conducive to violent thunder storms, often accompanied by strong winds.

Tropical conditions prevail in the coastal plains and other lowland areas because of slight elevation. Extremely poor drainage makes the Pacific littoral particularly damp and unhealthful during the wetter parts of the rainy season; yearly rainfall may be expected to average well over 70 inches. In sharp contrast the climate on the plateau and in the high valleys is both pleasant and healthful in spite of rather high daytime temperatures. Semi-tropical in character, these lands escape true tropical conditions because of greater elevation. While day temperatures may become relatively high, nights are generally cool and comfortable. At San Salvador the diurnal range is often much greater than the seasonal, and the same is doubtless true in most other sections of the Republic. In view of its healthful climate, the highland is the best developed section and contains fully three-fourths of the country's

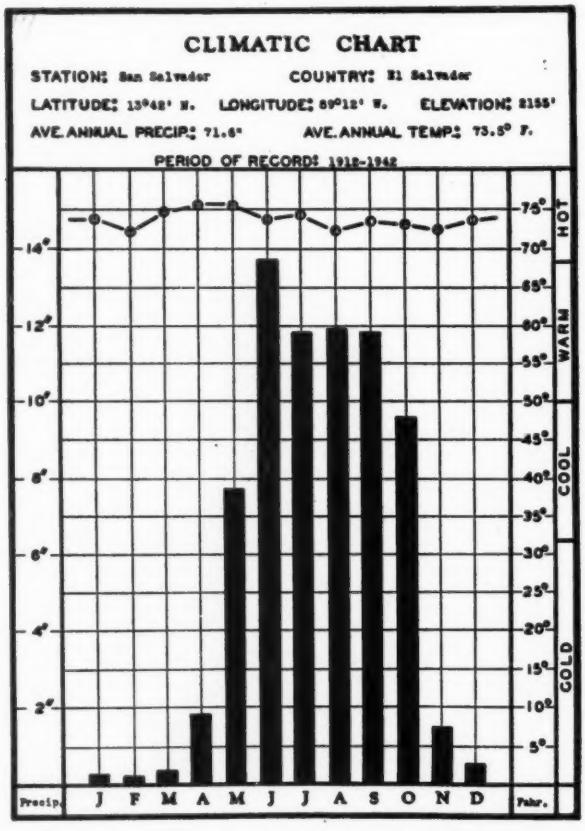

FIG. 3. This chart presents vivid proof of El Salvador's two seasons, the wet and the dry. The rainfall variability stands in sharp contrast to the small range in monthly mean temperatures.

inhabitants. Temperate conditions exist on the high-lying mountain slopes and rainfall may total from 70-80 or more inches each year. The northwestern part of the Republic, especially the sections bordering on Guatemala and Honduras, is the driest, receiving perhaps less than fifty inches of precipitation annually.

NATIVE VEGETATION

The once dense and rather extensive forest tracts have largely disappeared due chiefly to a rapidly expanding agricultural population. Probably not more than 10 to 12 per cent of El Salvador is covered with timber and it is doubtful that any considerable expansion will take place because of continuing population pressure. The forest lands are mainly confined to the higher mountains where pine, oak and walnut occur, or to the coastal lowlands and adjoining river valleys which give rise to dense tropical stands consisting of balsam, dyewood, mahogany, rosewood and cedar; mangrove swamps border some stretches of the coast.

Grasslands are a familiar sight thruout most of the Republic, ranging from the lush vegetation of the Pacific littoral to the short grass varieties in the drier areas. On the highland they resemble to a marked degree the short grass prairies found in large sections of western United States. During the rainy season the grasses reflect the abundance of moisture in color and growth; the dry season is accentuated by the brownness of the landscape.

NATURAL RESOURCES

Forests. Trees of greatest commercial value, especially as regards export, are mahogany, cedar and rosewood, most of which are exported in the log to the United States. The balsam is another tree of outstanding value and, altho native to El Salvador, has been known as the *Bálsamo del Perú* since the days of the Spanish conquistadores.[3] The tree occurs principally on the low mountain sections between the port cities of Acajutla and La Libertad; this area is usually referred to as the *Costa del Bálsam.*

Already greatly limited in timber resources, El Salvador will find its remaining forests depleted unless the Government exercises greater control over timber exploitation. While these forests are

[3] So named because the resin extracted was shipped to Lima, Peru, for export overseas during the Spanish colonial period. It is now extensively used for surgery and in the treatment of skin diseases owing to its antiseptic qualities; the resin is also important in the preparation of perfumes. El Salvador has a virtual monopoly in production.

mainly in less accessible sections of the country they will no doubt be eventually removed by persistent fuel gatherers and charcoal burners; wood and charcoal peddlers with their well-burdened donkeys and mules are a common sight in many villages and towns.

Minerals. A large number of minerals are known to be present but no extensive exploitation has taken place except in the case of gold and silver. These two minerals were mined by the Spanish and have continued to maintain an important position in the Republic's economy. A mineralized zone appears to extend more or less the entire length of the country, from Metapán in the northwestern extremity to Santa Rosa in the east-central part, with the departments of San Miguel, Morazán and La Unión the leading producers. Insofar as is known minerals occur in small, widely scattered deposits, most of which are of rather difficult access making exploitation slow and costly; such factors have tended to discourage foreign capital from entering the mineral industry and local finances are not adequate. Among the numerous minerals other than gold and silver, one finds coal, lead, and mercury of some importance. Deposits of asbestos, bauxite, copper, gypsum, iron, platinum, quartz, sulphur and zinc will most likely be mined for export when world prices encourage exploitation. Easily accessible outcroppings of granite, lava, limestone, and marble offer ample supplies for building stone.

Soil. In general the soils are outstanding because of their richness, a condition common to both the alluvial and residual types when the parent materials are of volcanic origin. Disintegration of lava is rapid owing to the moderate and high temperatures, and to the rather general abundance of precipitation. High fertility encourages widespread cultivation and in many instances tillage is being extended high on the mountain slopes in spite of possible destruction from volcanic activity. There are also numerous mountain valleys covered with excellent soils for agricultural purposes; one of the richest farming areas in Central America is the Lempa Valley.

Fuel and Power. El Salvador depends almost entirely upon imports for fuel oil and coal supplies; the country's coal deposits are reportedly of a very low grade and unsuitable for industrial needs. Charcoal is used quite extensively for cooking purposes. Power resources of the many streams have been but slightly developed altho there is an urgent demand for electricity. Shortages

of power experienced during the dry season indicate the great need for more adequate installations. The Lempa offers much in potential power but earthquakes have tended to discourage construction of dams and reservoirs. Prospects that hydroelectric facilities will be increased are meager and it is doubtful that such developments will take place on a large scale without generous assistance from foreign capital.

POPULATION

The population on December 31, 1944, was estimated at approximately 1,934,925, making the average density slightly more than 146 persons per square mile.[4] El Salvador is not only the most densely inhabited country in Central America but, except for Haiti, has the greatest number of people per square mile among the American republics. The population is largely clustered around cities on the highland and, altho the density tends to thin out toward the borders, no part of the Republic remains unoccupied. It is believed that at least three-fifths of the people are rural.

Three racial groups, white, mestizo, and Indian, make up nearly the entire population. The whites, mainly of Spanish or European descent and representing about one per cent of the inhabitants, dominate the economic, political, and social life of the country. In sharp contrast are the mestizos (of mixed white and Indian blood) who constitute approximately 80 per cent of the population and carry on most of the agricultural activities. The majority of these people have relatively low purchasing power and live under rather primitive conditions (Fig. 4). The third group, the Indians, account for slightly less than 20 per cent of the total population and have largely lost their identity insofar as speech and customs are concerned. The foreign population is insignificant in both number and influence and there are but few Negroes.

Principal urban centers are located on the highland and usually near one or more of the numerous volcanoes. The capital, San Salvador (elev. 2155 ft.), is the largest and most important city, having a population of approximately 107,859. This center, completely modern with its paved streets, attractive public and private buildings, charming residences, and spacious parks, is encircled by mountains and overshadowed by the volcano San Sal-

[4] The Republic is divided into fourteen departments and of these San Salvador, Santa Ana and San Miguel are the best developed and most densely populated.

vador. The second largest center of importance with a population of around 88,612 is Santa Ana (elev. 2123 ft.), an old but exceedingly picturesque colonial city. It is located in the western part of the country about forty-one miles northwest of the Capital in the heart of El Salvador's chief coffee-growing district. Because of its strategic location, this city occupies a key position as the center of the Western Military Zone. About eighty-five

FIG. 4. A farm home in the mountains near San Salvador. Tobacco leaves are hanging on poles to dry.

miles southeast of San Salvador and situated near the volcanoes San Miguel and Chinameca is San Miguel (elev. 335 ft.), also an old attractive colonial town (Fig. 5). San Miguel has a population of around 47,845 and is the leading center in the eastern section of the Republic. Santa Tecla (Nueva San Salvador—elev. 3117 ft.), capital of the maritime department of La Libertad, has developed into an attractive residential center with a population of about 34,941. Many of the city's inhabitants commute to San Salvador which is only seven miles to the east. Ahuachapán (elev.

2634 ft.), an important manufacturing and distributing point, has a population of approximately 34,158. It is located in the southwestern part of the Republic in the center of a rich agricultural district devoted chiefly to the production of coffee, sugar

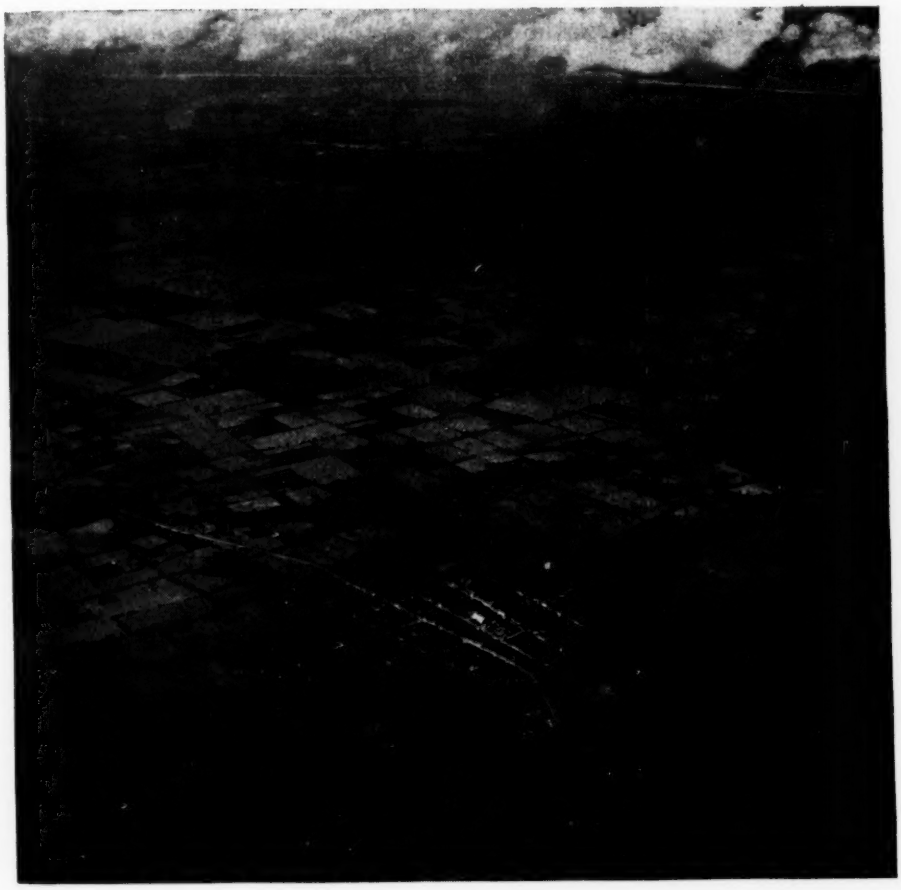

FIG. 5. Aerial view of San Miguel and vicinity. The Pan-American Highway passes thru the city. (Courtesy of TACA)

cane and cereals. To a very great extent these cities control the destiny of El Salvador.

TRANSPORTATION AND COMMUNICATIONS

El Salvador is noted as having the most complete system of roads and railways in Central America. An extensive network of roads, more than one-half of which are motorable thruout the

year, totals approximately 3500 miles; heavy rainfall, causing rapid deterioration, makes maintenance both difficult and expensive. The Pan American Highway, for which El Salvador has the distinction of being the first country to complete its share, bisects the Republic from San Cristobal on the Guatemalan border to the Honduran boundary on the east. Within the Salvadoran section this roadway totals about 196 miles and passes over relatively level terrain; it is the Republic's main route of travel. At Santa Tecla a paved road (Fig. 6) branches off the Pan American route and connects San Salvador with its seaport, La Libertad. Other secondary hard-surfaced roads are under construction and these will eventually give many areas now isolated ready access to both the Pan American Highway and the railways. The Cuscatlán Bridge over the Lempa, completed in 1942, is the largest suspension bridge in Central America as well as on the entire Pan American Highway. A bridge across the Goascorán makes possible automotive travel between El Salvador and Honduras. An international bus line operates between San Salvador and Guatemala City, a trip which normally requires about eight hours.

Fig. 6. The highway between Santa Tecla and La Libertad. Ox-cards are common on all Salvadoran roads.

Railway facilities are provided by two systems, the Salvador Railway Company, Ltd., British owned, and the International Railways of Central America, a United Fruit Company enterprise. The British line connects Acajutla with Sonsonate, Santa Ana, and San Salvador, and altho there are only about ninety miles of trackage, its importance lies in the fact that it provides an outlet to the Pacific for much of the western third of the Republic. Lines of the United Fruit Company, totaling approximately 300 miles, extend nearly the full length of the country and give service to most of the major population centers. A branch leaves the main line at Texistepeque and runs southward to Santa Ana, continuing in a southwesterly direction to Ahuachapán. The I.R.C.A. system offers connections with the Guatemalan town of Puerto Barrios on the Caribbean and with Guatemala City. In addition to modern modes of travel, the ox-cart, pack animal,

and porter still have an important place in domestic commerce.

The three major ports of El Salvador, from northwest to southeast, are Acajutla, La Libertad, and La Unión. Acajutla, located about fifty-five miles from San Salvador (approximately four hours by rail), is an open roadstead, the ships anchoring well off shore while lighters transfer passengers and freight; lack of a harbor does not prevent it from being the country's leading coffee port. La Libertad, the principal passenger port, is also an open roadstead but, unlike either Acajutla or La Unión, must depend entirely upon motor transport since there are no railway facilities; it is about an hour's drive by automobile from the Capital. The chief commercial port, La Unión,[5] is located about 156 miles southeast of San Salvador (approximately ten hours by rail) and offers an excellent harbor. Most of the coffee produced in the eastern part of the country is exported from La Unión. These three ports are on the schedules of several steamship lines, both American and European.

Two air lines, Pan American World Airways and Transportes Aereos Centros Americanos[6] (Fig. 7), control all foreign plane service. A domestic company, Transportes Aereos Salvadoreños, operates regular service to eastern points within the Republic; its planes are also available for charter. El Salvador's main airport, Ilopango, lies about one mile west of Lake Ilopango and approximately six miles east of the Capital. The airport is under governmental control but open to both commercial and military planes.

Cities and towns are linked together by a net-work of government-controlled telegraph lines. All American Cables make possible contact with neighboring countries and distant parts of the world; submarine cables extend southward to Panama and northward to San Francisco. Telephone facilities are confined mainly to the cities and towns altho some lines extend into the rural areas, especially the wealthier plantation districts. El Salvador has five radio stations, three of which are owned by the Government and play a prominent role in the domestic political scene; radiotelegraph and radiotelephone service is available to the United States. The postal system covers most of the Republic and

[5] Cutuco, about one mile from La Unión, is the principal embarcadero and has a good system of modern wharves, warehouses and equipment.

[6] TACA maintains schedules between Miami and the Panama Canal Zone for all the Central American capitals.

mail consigned to points outside the country is handled by air, railway and ship.

COMMERCE AND INDUSTRY

Since the economy of El Salvador is based almost entirely upon agriculture, the life of the people largely centers around farm, ranch and plantation activities. Climatic differences and high soil fertility have done much toward making possible exten-

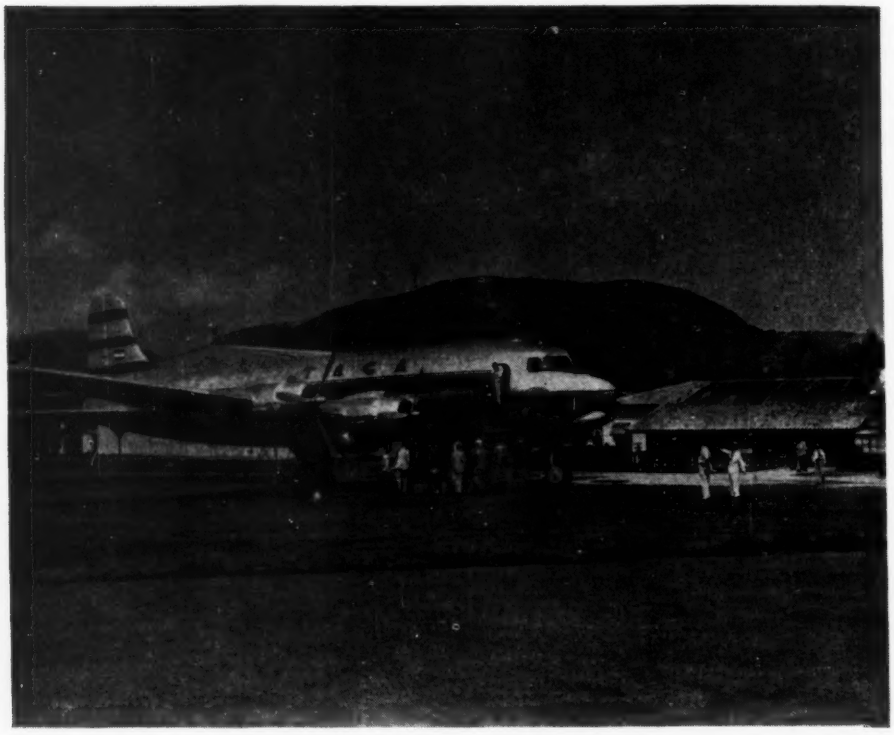

FIG. 7. El Salvador's main airport, Ilopango, occupies a significant place in Inter-American air service. (Courtesy of TACA)

sive tillage until today as much as four-fifths of the land, held mainly in small farms, is planted to some crop. In view of the large acreage now under cultivation, it is doubtful that much expansion will take place in the future as most of the remaining lands are not suitable for crop production.

The agricultural economy can be divided into two phases, namely, subsistence and commercial. Under the subsistence phase

black beans, corn, rice and sugar cane form the basic food crops for the laboring classes; corn is by far the most extensively grown. Wheat, tobacco, fruit and vegetables are also significant. Tobacco is widely cultivated but chiefly by small farmers for home consumption; production fails to meet domestic demand, thereby necessitating substantial imports from Honduras and the United States. In the past few years henequen and cotton have come into prominence, the henequen being used for sacks, baskets and rope, and the cotton for homespun fabrics.

Another significant activity in the subsistence economy is stock raising. The majority of the cattle are of the native type apparently descendants of old Spanish breeds introduced during the early colonial period; greatest concentration takes place in the lowland areas bordering the Pacific where the more suitable grasslands occur. Swine are found on nearly every farm but the greatest numbers occur in the departments with the largest corn yields. Horses, mules and donkeys are widely raised but goats and sheep are of small importance.

Insofar as commercial agriculture is concerned, El Salvador is a one-crop country. Most of the Republic's wealth is derived from the sale of coffee and the importance of the crop, not only from the standpoint of revenue but also the effect which it has on the economic stability of the country, is widely recognized both at home and abroad. The coffee bean, purchased chiefly for blending purposes, sells at a premium in foreign markets because of its exceptionally high quality. The popularity of Salvadoran coffee has resulted in a strong demand, a factor of greatest significance to the financial and political make-up of the Republic.

Coffee is grown in each department but greatest cultivation occurs on small farms in the central and western highlands back of the coastal lowlands (Fig. 8); a combination of rich soil, proper temperature and good drainage in this area makes for ideal growing conditions. Altho an elevation of 2000-3000 feet is considered best for production, the better prices offered for so-called 'highland coffee' has encouraged cultivation even higher on the mountain slopes. Exceptionally favorable growing conditions, cheap transportation, low-cost labor, and an easily accessible port have done much for making the Department of Santa Ana the leader in the industry; La Libertad, Usulután, Ahuachapán and Sonsonate also account for a considerable portion of the crop. El Salvador's

coffee industry has progressed rapidly and there is a widespread use of modern equipment and techniques.

Among the several coffee-growing countries of Latin America, El Salvador holds third place, being exceeded only by Brazil and Colombia. During the past few years much attention has been directed toward a diversification program in agriculture for no other Latin American country is so dependent upon a single agri-

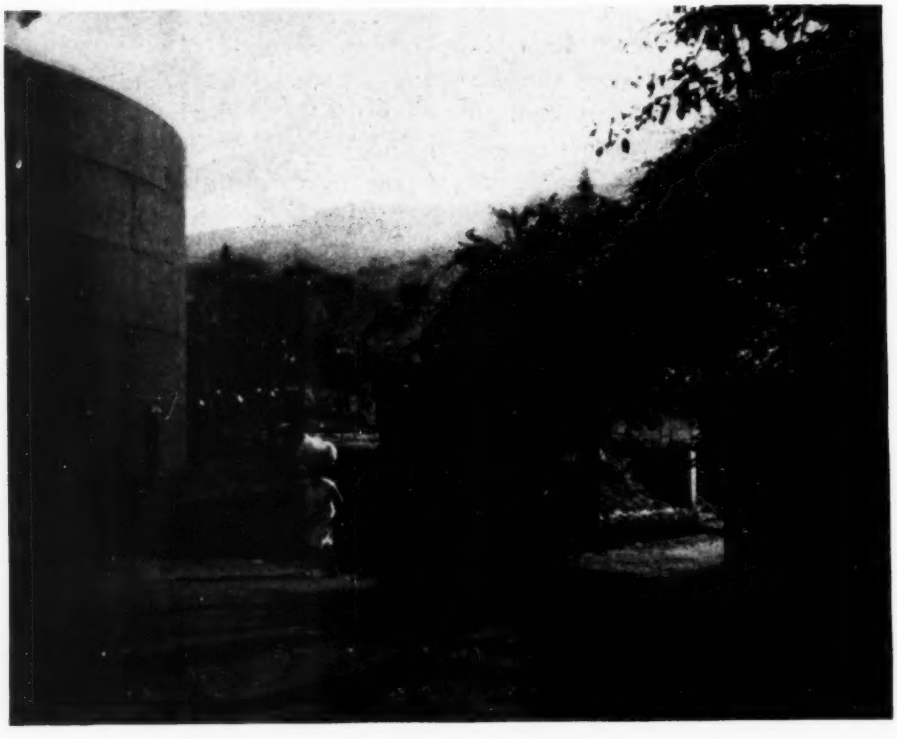

FIG. 8. Entrance to a coffee finca in the highlands near Santa Ana.

cultural crop; the United States Department of Agriculture is cooperating in the program. Experiment stations are located at San Andres and Zapotitán where new crops, such as castor beans, cinchona, derris, peanuts, palm nuts, roselle and sesame are under experimentation. Considerable livestock improvement is taking place thru the importation of choice breeding stock, chiefly from the United States.

In recent years rice has advanced to second place in commercial importance, but production still falls far below that of coffee.

Acreage is expanding rapidly because of increased domestic consumption and a greater demand on the export market, principally by Honduras. Sugar cane, mostly confined to the lowland areas in the departments of La Libertad, San Salvador and Sonsonate now ranks third among the commercial crops. The greater part of the cane is produced in the Department of Sonsonate because water is readily available for irrigation. In order to stabilize the price of sugar, the crop is now raised under a governmental quota system. Production of cotton is also under similar control, a condition brought about by the importance which it has assumed in the past ten years and the present excess of production over domestic requirements; the Department of Usulután leads in production. Other commercial crops are cacao, henequen, indigo, rubber, tobacco, and a wide variety of tropical fruits and nuts.

Production of coffee, sugar, beans and corn has created a large demand for bags and consequently the cultivation of henequen[7] has been strongly encouraged so as to make the country independent of foreign supplies. The Salvadoran law, requiring that all coffee offered for export be shipped in bags manufactured within the country, has caused a rapid development of the henequen fiber and bag industries. Cultivation is mainly concentrated in the departments of San Miguel and Morazán where soil and climatic conditions are particularly suitable. Present production is more than sufficient to meet domestic needs, the surplus entering the export market with Honduras the best customer. A kapok industry is being encouraged and some of the product now goes to the United States; the same is also true of rubber. The cattle industry supplies hides and tallow for export in addition to meeting local demands.

In spite of the fact that El Salvador is primarily an agricultural country and does not have suitable deposits of coal for industrial development, serious attempts are being made to extend manufacturing. This has become an established national policy, the purpose of which is to secure a more balanced economy and at the same time gain a much greater degree of freedom from foreign manufacturers. Prior to World War II the industries were principally divided between native crafts and a few small manufacturing establishments. Native crafts were largely confined to the production of textiles, earthenware and leather goods. Altho the

[7] The Salvadoran henequen plant is native to the region and has been produced by Indians since earliest times.

manufacturing industries produced in part the same commodities as the native crafts, they were primarily engaged in processing agricultural products for both domestic consumption and export. Preparation of coffee beans, refining of sugar, and production of textiles, beverages, cigarettes, leather goods, and vegetable dyes were the more important manufacturing and processing activities. The manufacture of bricks, pottery, and furniture was also of some significance. All of the enterprises were badly handicapped however thru lack of suitable transportation facilities, skilled labor, and smallness of the domestic market.

World War II, by greatly interfering with the Republic's imports, caused a noteworthy expansion in the manufacturing of textiles, chemicals, pharmaceutical preparations, wines, liquors, bags, clothing, hats, wooden and metal furniture, flour, soap, candles, matches, beverages, tobacco, light implements, leather products, vegetable oils, and cement; the processing of coffee beans and the refining of sugar also underwent considerable improvement. The candle industry occupies an important position in the domestic scene because a large portion of the population depends on candles for lighting, owing to the widespread lack of electricity and the high cost of kerosene which has to be imported. The lumber industry supplies a substantial amount of wood for fuel, furniture, and construction purposes. The Government has furnished tariff protection, whenever and wherever it was felt necessary to encourage the development of an industry believed important to the national economy.

Development of manufacturing has created a strong demand for labor-saving equipment altho in certain industries the low wage scale discourages the installation of modern machinery; in some instances there has been considerable opposition by labor against modernization. Most of the manufacturing plants operate on imported fuels, chiefly secured from the United States. A few establishments depend on inadequate hydroelectric installations which at times are hardly able to meet urban household requirements. Lack of adequate storage reservoirs and power stations greatly handicaps the Salvadoran desire to industrialize.

El Salvador is chiefly an exporter of raw materials and food stuffs, coffee alone constituting approximately four-fifths of the exports;[8] gold, silver, sugar, balsam extract, henequen, cotton, rice, hides and indigo account for most of the remainder. Salva-

[8] The Inter-American Coffee Agreement became effective on October 1, 1940. Coffee export quotas to the United States and other foreign countries were established

doran indigo, altho now largely supplanted by a synthetic product, finds a steady market in Mexico and Peru. As a rule the exports exceed the imports in value, resulting in a most favorable balance of trade (Fig. 9).

The import demands of the country are usually relatively simple since the majority of the people are agriculturalists and have exceedingly low purchasing power. Furthermore, many foreign concerns find it difficult to compete with Salvadoran manufacturers because of high tariff schedules and subsidies given to various domestic enterprises. Imports consist principally of manufactured goods and processed foods such as textiles (including cotton, linen, wool, silk and rayon), chemicals, pharmaceuticals, petroleum and petroleum products, machinery, tools, automotive vehicles and accessories, arms and ammunition, clothing, paper and cardboard manufactures, leather, cement, wines and liquors, tobacco, and motion picture films. The amount and value of imports reflect to a very marked degree the prosperity of the Republic's coffee industry because there are but few other sources of foreign exchange; even Government revenues are in part derived from an export tax on each bag of coffee.

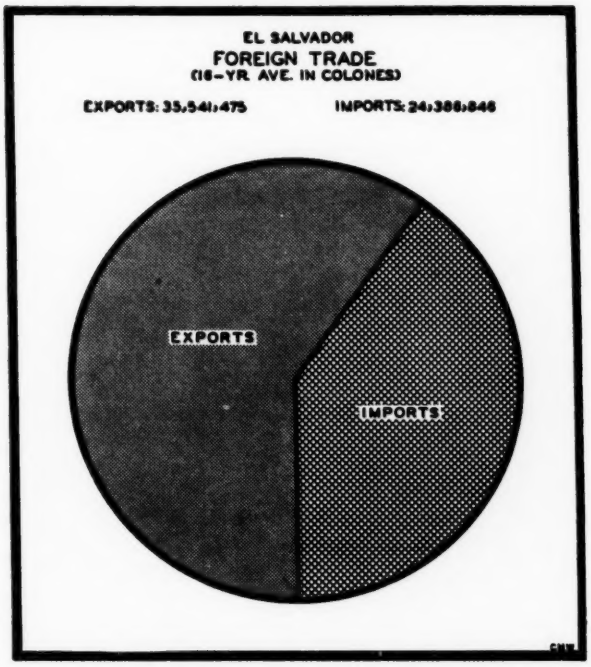

FIG. 9. Coffee sales abroad largely account for the excess of exports over imports.

The greater part of the imports are received from the United States, that country in turn purchasing most of the exports. Influence of the United States in the foreign trade of El Salvador

for each one of the Latin American producers. This measure, ratified by El Salvador on January 2, 1941, not only assured the country a market for its chief crop but indirectly, higher prices. The agreement had a definite stabilizing effect on the entire coffee industry.

increased greatly during the 1930's as Germany became more and more involved in European difficulties. The commercial policy of the Republic favors those nations buying Salvadoran products, the policy based chiefly on the most-favored-nation agreements and reciprocal free-trade pacts. In view of this the United States, as El Salvador's best customer, receives the greatest number of benefits from the tariff regulations. This condition may be expected to continue as long as the American people purchase large quantities of Salvadoran products.

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THE SONORAN RAILROAD PROJECT

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INTRODUCTION

Slowly and quietly, during the past two decades, without attempts at secrecy, but with a minimum of fanfare, the Mexican Government has been surveying, grading, and constructing a railroad that will eventually connect the rich irrigated farmlands of the lower Colorado delta area with the food-hungry regions of central Mexico.

This new rail line, now about half completed, will shorten the rail haul from Mexicali, Lower California, to Santa Ana, Sonora, by about 120 miles; and, when passenger service is started, may cut as much as five hours from the running time between Los Angeles and Mexico City.

General route of this new railroad line, in its relation to the terrain, political boundaries, and present railroads, is shown in Fig. 1, a summary map drawn to the same projection as the World Aeronautical Chart (1/1,000,000; sheets 404, 405, 471, and 472).

HISTORICAL BACKGROUND

The problem of land routes from the mainland of Mexico to the region now known as California was recognized prior to 1540, and in that year, Francisco Vasquez de Coronado sent one of his most competent military leaders, Captain Melchior Diaz, with a supporting party, to attempt a land journey to California. At the same time, a sea expedition, in charge of Hernando de Alarcon, sailed northward in the Gulf of California. Alarcon ascended the Colorado River for a distance of about 85 leagues (230 miles), and left some lead markers on the banks of the river at various places. Diaz, after a difficult journey, found some of these markers, crossed the Colorado River, and went inland, into the area that is now Baja California, to some mud volcanoes (still extant). He was killed on the return journey.

At this time, and for some time thereafter, California was commonly believed to be an island, separated from the mainland of New Spain (western North America) by the mythical Strait of Anian, of which the Gulf of California was the southern part. It was not until about 1698 that the continentality of California was

proven. At this time, Eusebio Francisco Kino, a Jesuit missionary, who was also one of the most competent geographers of his time, climbed the Pinacate Peaks (Fig. 1: Pinacate Lavas), looked to the west, and saw that "California no es ysla, es continente" (California is not an island, it is part of the continent). Further work by Kino led to the construction of his famous map of 1701, which

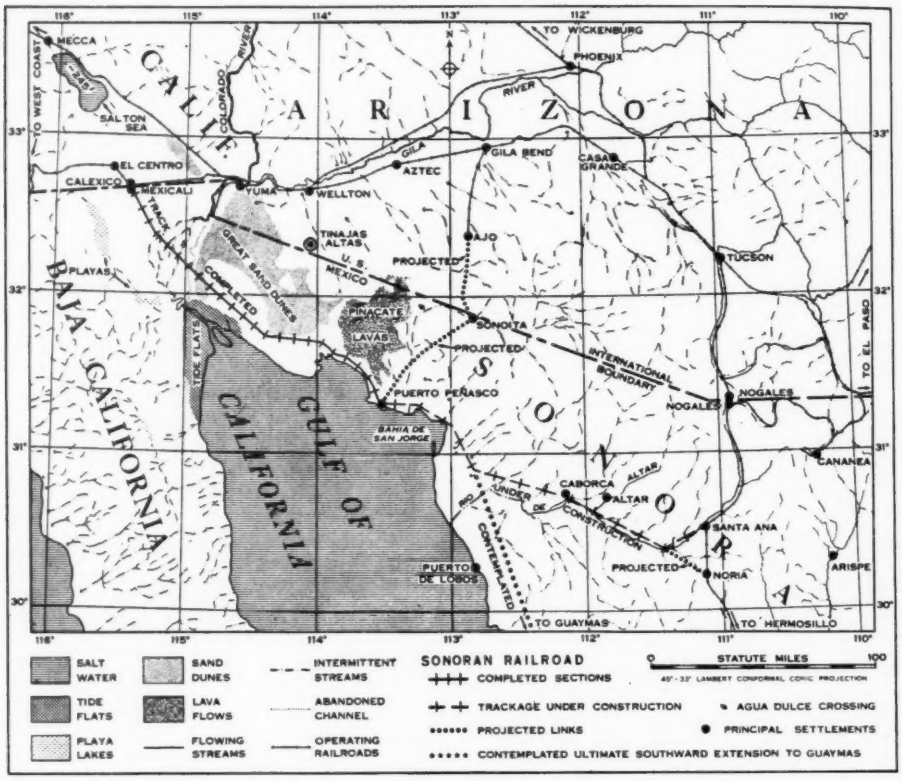

FIG. 1. Summary map of the Sonoran borderlands, showing routes of present and projected railroads, drainage pattern, and major political boundaries.

shows the entire borderland region (Fig. 1) with substantial correctness. An aerial view of this region, taken from a Navy rocket about 100 miles above the earth's surface, shows this area from a viewpoint never attained by man.

From Kino's time onward, a difficult overland trail, from Santa Ana, thru Sonoita, to Yuma, gave land access to California. Because of its difficulty and hazardous nature, this trail became known as "El Camino del Diablo" (the Devil's Road). More

FIG. 2. Aerial view across the Sonoran borderlands, from a U. S. Navy rocket 100 miles above the surface. To facilitate comparisons, place names, railroad route, and U. S.-Mexican boundary have been added. Arrow in lower left indicates orientation.

Key:

M = Mexicali	P = Puerto Peñasco
Y = Yuma	T = Tucson
A = Ajo	N = Nogales
SO = Sonoita	ST = Santa Ana

W = the Wilcox Playa (an enormous dry lake in Arizona).

All settlements listed here are shown in Fig. 1.

than 500 travellers are buried along it, from Sonoita to Yuma. Most of the deaths were from thirst, there being only two sure sources of water—Agua Dulce (west of Sonoita, Fig. 1) and Tinajas Altas (southeast of Yuma, Fig. 1)—in almost 200 miles of trail.

This trail was inspected by Juan Bautista de Anza, founder of the city of Yerba Buena (now San Francisco), prior to his famous journey there, but when he took his convoy of colonists from central Mexico to San Francisco, de Anza used the longer Gila Valley route (following the present railroad route), and arrived at his destination, in 1776, with his entire party in good condition (one death en route; two births).

In recent years, intensive exploration by Godfrey Sykes, Carl Lumholtz, Alberto Celaya, and many others, produced an extensive knowledge of the Sonoran Desert region.

TERRAIN PROBLEMS

When, in the early part of this century, a workable treaty between Mexico and the United States made possible agricultural development of the Mexican portion of the Colorado delta lands, the need for better land communication between the Mexican parts of the new irrigated districts and the main portion of Mexico became acute. Transportation over the old Camino del Diablo was too costly, dangerous, and undependable; shipment of Mexican products thru the United States was time-consuming and too costly; shipment by sea was unworkable, because the Colorado, after about 1909, no longer flowed to the sea, but evaporated on its delta lands below Yuma.

Altho it would be technically possible to lay rails along the Camino del Diablo, this would entail a crossing of a part of the Pinacate Lavas (Fig. 1, Fig. 3, A), and would follow a route with many steep grades and river crossings. An "air line" route, from Mexicali to Santa Ana, likewise would be economically unworkable because of lava flows, sand dunes, and rough terrain.

Using the map drawn by Eusebio Kino, in 1701; and the detailed surveys made by Carl Lumholtz and Alberto Celaya, in 1909, Mexican engineers decided upon a route which followed the Sonoran shore of the Gulf of California to the roadstead of Puerto Peñasco, then angled southeastward to the valley of the Rio de Altar, and thence went upriver to Santa Ana (see Figs. 1 and 2

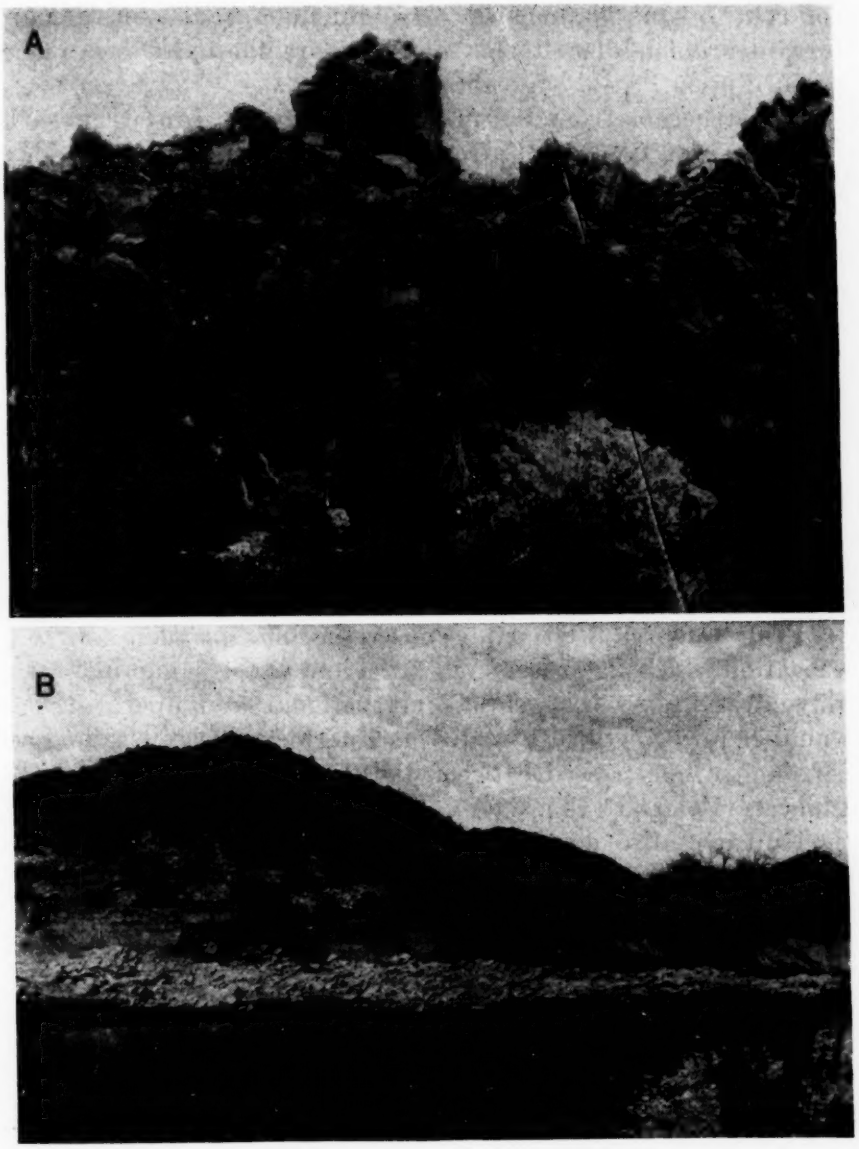

FIG. 3. Terrain features of the Sonoran Desert. In A, the face of one of the lava flows from Pinacate Volcano is shown. More than 1500 square miles in northwestern Sonora are covered with contorted volcanic glass like this. View B is the Agua Dulce crossing of the Sonoita River, and the last place between Sonoita and the Gulf of California where drinkable water can be found at all seasons. This was the site of Kino's "El Carrizal" camp in 1698.

for route). This is almost a "straight line" route, but numerous terrain problems had to be solved before the exact location was decided upon.

Construction from Santa Ana to Caborca raised no serious problems, for there was already a trail down the river bed, and enough drinking water for exploration, surveying, and construction crews were available locally. West of Caborca, however, the location engineers began to have serious worries, for, during all of written history, only a handful of men had crossed the vast and arid "despoblado" (unpopulated area) and survived.

Aerial surveys were decided upon as the best method of making the preliminary location. By grading the main street of the town of Caborca, a reasonably good landing field was constructed, and from that makeshift airport, scout planes carrying a skilled desert pilot, used to the bumpy air of the Sonoran region, and a sharp-eyed engineer, took off at regular intervals. When a promising route was located, aerial photographs were taken, and with these as a guide, ground parties filled in the details.

From Caborca to Puerto Peñasco the chief problem was to find a location which was reasonably level and at the same time reasonably straight, so that both constructional and operating costs would be low. Northwestward from Puerto Peñasco, a route had to be found which passed between the "sea of broken glass" about Pinacate Volcano (Fig. 3, A), and the mud flats on the shore of the Gulf of California, which are composed of "liquid goo," upon which tracks cannot be laid. West of Long. 114° the problem became one of avoiding as much of the dune sand as possible, so that, once tracks were laid, they would "stay laid." Ground exploration in this area was most difficult, because even a jeep will stall in powdery sand. Here, while attempting to survey a better route around the south end of the medanos (great sand dunes), the Mexican engineer Lopez-Collada, with his entire field party, died of thirst.

Over the delta lands of the Colorado, the route chosen was one of alternate embankments and trestles, so that flood waters would not be retarded. As the distributaries at the mouth of the Colorado are spread out over more than fifty miles, this entailed an enormous amount of construction. Because of frequent floods and occasional violent earthquakes, maintenance of this section will be costly.

Wherever the right of way crosses a stream bed, a very large trestle is needed. All of the streams in this area, with the sole exception of the Colorado River, are intermittent. For about 360 days in the year, they carry little or no water. For the remaining five days, they run thirty feet deep with the speed of a millrace.

Two views of the terrain in this little-known desert area are shown in Fig. 3. The dune areas differ from those of the Sahara only in that Arabs do not ride camels across them.

The flooding tendency of the Sonoran streams is due not only to the general barrenness of the desert terrain, and to its ruggedness, but also to a modified monsoon rainfall pattern, so that most of a year's rainfall occurs in a very few storms of extreme intensity. As an example of this, at Sonoita, Sonora, in August, 1931, the writer measured a precipitation of five inches in two and one half hours. This storm was not a record-breaker even for Sonoita. The same day, as a result of this storm, the Sonoita River rose more than thirty feet; and on the following day, repair work was started on more than half the buildings in town.

These floods are an almost annual occurrence. By way of comparison, if the flow of the Mississippi River, south of St. Louis, increases to ten times average, the fact is noted in headlines even in European newspapers; but if the flow of the Sonoita River increases more than 10,000 times, as it does about every other year, Gila Bend papers will devote one paragraph to it.

Climatic charts for both terminals of the Sonoran Railroad, and for one intermediate point (Altar), comprise Fig. 4. From the temperature curves it can be seen just why track laborers were supplied with air-conditioned living quarters. Rainfall scale shows the summer precipitation peak ("Monsoon Rains") plainly. Note the dryness of Mexicali, due to the combined effects of rain shadow and strong local convection. Were it not for irrigation, Mexicali could not exist. With irrigation, it is the commercial center of a highly productive agricultural district.

PRESENT STATUS OF PROJECT

Original plans called for completion of the Sonoran Railroad Project ("Ferrocarril-Intercalifornia del Sur") late in 1940. War, with its accompanying shortages of steel, lumber, and machinery, have delayed completion. At present, operating trackage is completed from Mexicali to Puerto Peñasco, a distance of about 160

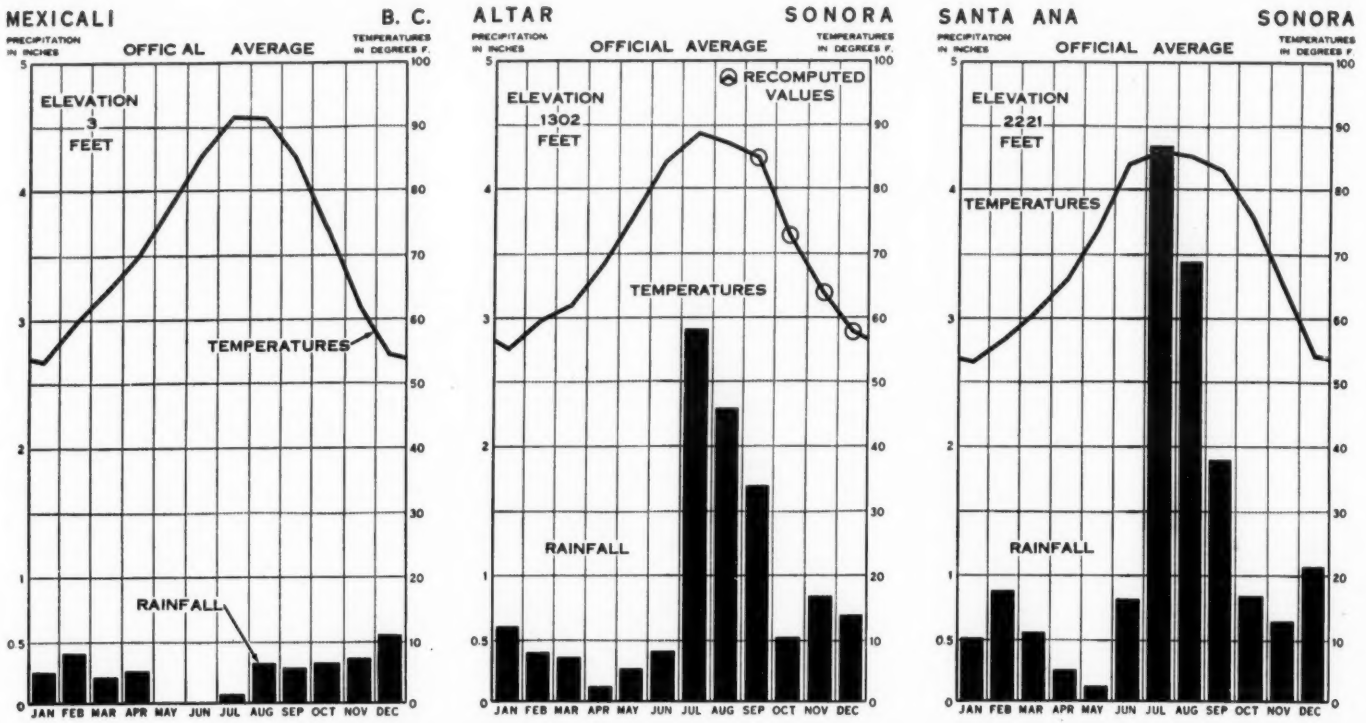

FIG. 4. Climatic charts of Mexicali, Altar, and Santa Ana, showing rainfall totals and temperature means, as measured by the Servicio Meteorologico Mexicano, the Mexican equivalent of the U. S. Weather Bureau.

miles, which is about half of the mileage and two thirds of the hard work. Considerable grading has been completed in the remaining half, particularly near the town of Caborca. Further progress awaits availability of steel in excess of the replacement needs of the other Mexican Railroads, which have been running on an "emergency repairs only" basis since about 1940.

FURTHER EXTENSIONS

When the railroad plan was drawn up, possible future extensions were planned. These include a link from Ajo, Arizona, present terminus of the Tucson, Cornelia, and Gila Bend Railroad, and an important producer of copper, thru Sonoita to Puerto Peñasco. This link would permit shipment of concentrated copper ores by water to the electrolytic refineries on the eastern seaboard. A short link from the valley of the Rio de Altar west of Santa Ana to Noria is also planned, to reduce the running time of thru trains.

Should thru traffic from points beyond the Colorado River to points beyond Guaymas (an important Mexican seaport on the Gulf of California) be sufficient in the future, a rail link from Puerto Peñasco, thru the Encinas Desert, to Guaymas, is contemplated.

ECONOMIC IMPORTANCE OF THE SONORAN RAILROAD

Preliminary consideration of the Sonoran Railroad Project shows that its economic value, on a dollars and cents basis alone, is problematical. Even tho the route, when completed, will save 120 ton-miles of haulage on each ton of merchandise shipped, its cost is such that the "break even" point will not be reached in the near future.

The economic value of this railroad is not all on a dollars and cents basis, as is shown by ordinary bookkeeping. By use of this route, when completed, it is hoped that agricultural products from the Mexican delta lands can be shipped to Mexican consumers at a profit. At the present time, cost of shipment to most Mexican points, via the United States, is so high that the consumers cannot afford to buy them, and sale is more profitable to consumers in the United States.

Coupled with this market differential is a serious labor problem. Because of the hazards of the present journey over the old

Camino del Diablo, the difficulties of crossing the border (mostly exaggerated), and the comparatively high wages paid in the United States, it is most difficult to get sufficient agricultural laborers in the Mexican irrigated lands on the Colorado Delta. The present rate of exchange (5.5 pesos = 1 dollar) also works to the great disadvantage of Mexican producers. When it is possible to ship Mexican agricultural laborers, at Mexican prices, to work Mexican lands; and then to ship the products of this labor, also at Mexican rates, to Mexican consumers, the present unhappy exchange differential will no longer interefere with food production and distribution in the delta lands.

CONCLUSIONS

The Sonoran Railroad Project, as outlined, appears to be an entirely sound attempt, on the part of the Mexican government, to correct a serious "bottleneck" in the national food distribution system. Its completion may also lead to the development of local mineral resources along the right-of-way, and will make profitable the shipment of livestock from many isolated Sonoran localities that now only produce for local use. The extensions planned for the future are not only logical extensions of present systems, but have a definite economic justification.

Altho a generation will pass, after completion of trackage, before a full economic evaluation of this project will be justified, it appears that the Sonoran Railroad will change some of the potential resources of northern Mexico into actual resources, while at the same time remedying a growing shortage of certain types of foodstuffs in central Mexico.

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WHY AND HOW TO TEACH A UNIT IN GEOPOLITICAL UNDERSTANDING

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It is more than likely that the lead article in any newspaper today, when a search is made for the basis of its issue, will be found to be concerned with a geopolitical problem. The purpose of this essay is to present a plea for, and to submit a few suggestions toward, the development of a unit in twelfth grade social studies under the title, "The Meaning and Influence of Geopolitics in the World Today." It is maintained that the inclusion of such subject-matter in a high school orientation course will provide a more adequate world view for either those students now about to be thrown into a rapidly contracting world society or those who will continue their education in cultural or professional areas.

Since it is a well recognized axiom of modern curriculum making that neither subjects nor topics should be injected into the course of study merely thru caprice or for personal reasons a defense of the demand for the inclusion of geopolitical understanding is in order. Edgar Bruce Wesley in *Teaching the Social Studies* lists fifteen techniques for the selection of materials for curricular inclusion. Among these are (1) opinions of selected groups; (2) other courses of study; (3) social, civic and economic deficiencies; (4) current problems or issues; and (5) textbooks.[1]

The validity of the selection of this topic can be maintained thru both of the first two criteria when reference is made to one of the lessons of the recent World War. Since the combined influence of geography and politics was inescapable the United States Army orientation course provided, in film and lecture, vivid descriptions of the organization of the Geopolitical Institute at Munich by General Karl Haushofer.[2] The reliance by Hitler and the German General Staff upon its geopolitical data is by now notorious. Furthermore, the concept of the "Heartland," the strategic control of which makes its master "Ruler of the World Island" and consequently "Ruler of the World," regardless of its

[1] Wesley, Edgar Bruce. *Teaching the Social Studies*, p. 103ff.

[2] United States Army Orientation Films; Army Air Force syllabus in geography, hours 57-60.

inherent truth or falsity, presents a challenging thesis for any peacefully minded citizen.[3] For this heartland, let it be noted, is located nowhere else than in south central Soviet Asia.

Happily, a few of the latest geography texts (other than official army material) include a discussion of the elements of Geopolitics. Such a text for high school use is *World Geography* by John Hodgdon Bradley.[4] During the latter days of the war Esso Marketeers, a propaganda agency of Standard Oil of New Jersey, issued a worthwhile world map based on Geopolitics for general distribution.[5]

Moreover, students and graduates themselves, in studying the deficiencies of the social studies curriculum, have recommended an expanded treatment of this important and functional subject area for today's students. The author participated in such a study made for the Holliston, Massachusetts, High School, and wishes to present further reasons for the inclusion of geopolitical understanding in the secondary school course, by the submission of data from one of these researches.

The Report of the Committee on Post-Secondary Pursuits in the Holliston School Survey stressed, on the basis of questionnaires returned by former students, the need for a greatly increased and expanded social studies program.

> Fifty-three graduates out of eighty-six requested more of these social studies than we now have in our high school to meet a need that is greater than our present curriculum fulfills. The graduates' suggestions ask for courses in Civics, International Relations, Social and Religious Tolerance, Human Relationships, Guidance, Current Events, Psychology, Child Psychology, Economics, and many others.[6]

The failure to mention Geopolitics by names does not in any way weaken the case for its inclusion in the social studies program. The name is technical but its scope as a subject is found in at least half of the subject areas mentioned in the report as worthy of inclusion. Especially gratifying is the request for International Relations, Economics, Current Events, and "Civics" (Government). These, together with geography, constitute the fountainhead of Geopolitics. Thus, it is asserted that a unit in geopolitical understanding offers the opportunity of satisfying a real demand from those who have evaluated present curricula as deficient.

[3] Mackinder, Sir Halford. *Democratic Ideals and Reality,* Chapter I.
[4] Bradley, John Hodgdon. *World Geography,* pp. 354-356.
[5] World War Map II, "Fortress Europe and the World Island."
[6] Holliston School Survey, Part III, p. 5.

This suggested unit, the construction of which can be facilitated by the utilization of the bibliography and syllabus accompanying this essay, may be placed at the beginning of the second semester in the twelfth grade course entitled, "International Relations in a Democratic World." The heading for the general area under which it falls may be "The United States and World Problems." The other units in this division can be "World Resources," "This Shrinking Globe," "The British Empire in Transition," "The U.S.S.R. and U.S.A.," "The Far East and the New Pacific World," "Latin America and the Future," and "The Role of the United States in World Affairs." It is expected that from twelve to eighteen weeks will be devoted to this division.

The geopolitical unit may be easily introduced thru the medium of a class discussion in current events or a discussion period following the viewing of a documentary or historical film dealing with almost any phase of world politics or order. The methods of teaching the unit as well as the entire area can comprise class discussion, explanations or lectures by the teacher, individual reports, group reports, essays, map construction, motion pictures, and symposia conducted by the chairmen (or other members designated by them) of each of the reporting groups.

Suggested materials, which may be used in the operation of this unit, are three popular textbooks, *Contemporary Problems, Here and Abroad,* by West, Merideth and Wesley; *Our Democracy and its Problems,* by L. J. O'Rourke; and *World Geography,* by John Hodgdon Bradley; the War Department films, especially "Divide and Conquer," *The Atlas of Global Geography,* by Erwin Raisz, Goode's *School Atlas,* the *World Almanac,* and other sourcebooks of a national and international scope, together with selected monographs and encyclopedias.

The syllabus which follows will suggest the over-all coverage and scope of the unit; the bibliography may be expanded or contracted as the teacher wishes (and as the limits of her library insist); the time schedule may or may not be thought too formal, too inelastic or too teacher-centered; and the list of individual and group projects may or may not be either adequate or desirable. The author's sole objective (and this is the also the objective which should mold and integrate the procedures of such a unit when placed in operation) is the demonstration of the inter-relationship of the world's geography, physical resources, and eco-

nomics and social, political, and national pressures. Time may truly prove that these relationships represent the most significant area of understanding yet left to us.

Syllabus for a unit, "The Meaning and Influence of Geopolitics in the World Today"

I. The Historical Evolution of the "Science" of Geopolitics.
  1. Subject matter fields
    a. History
    b. Philosophy
    c. Economics
    d. Sociology
    e. Political science
  2. Forerunners of modern geopoliticians.
    a. Henry Cary
    b. Treitsche
    c. Nietzsche
    d. Admiral Mahan
    e. Theodore Roosevelt
  3. Twentieth century geopoliticians
    a. Rudolph Kjellen
    b. Karl Haushofer
    c. Sir Halford Mackinder
    d. Nicholas Spykmann
    e. Ernest Ratzel

  Required readings:
    Bradley, *World Geography*, pp. 350-365.
    Fifield and Pearcy, *Geopolitics in Theory and Practice*, Ch. I.
    Mackinder, *Democratic Ideals and Reality*, Ch. I.
    Mahan, *The Influence of Sea Power on History*, Ch. I.
    Semple, *American History and Its Geographic Conditions*, Ch. I-II.

  Optional for special groups:
    Whittlesey, *German Strategy of World Conquest*
    DeSales, *The Making of Tomorrow*
    Dorpalen, *The World of General Haushofer*
    Weigert, *Generals and Geographers*
    Maillaud, *France*
    Boyd, *Polish Countryside*
    Crow, *The Tanaka Memorial*
    Fish, *The Path of Empire*
    Spykmann, *America and Geopolitics*
    Life Magazine, two issues in 1942, excellent popular accounts

II. Geopolitics in Theory and Practice
  1. The theory of seapower (Mahan)
  2. The theory of the "Heartland" (Mackinder)
  3. The state as a biologic organism (Kjellen)
  4. The theory of the "Rimland" (Spykmann)
  5. Influence of the continuous frontier (Turner)

  Readings as suggested above with the addition of:
    Turner, *Significance of the Frontier in American History*
    Turner, *Sections in American History*
    Whittlesey, *The Earth and the State*

III. Geopolitics and History
1. The expansion of Russia
2. The expansion of the United States
3. Bismarck's Germany
4. Cavour's Italy
5. Meiji Japan
6. Hitler's Third Reich
   a. Geopolitical lessons of World War II
      (1) Survival at Stalingrad and El Alemain
      (2) Battles of Midway and the Coral Sea
7. Present implications from geopolitics
   a. "One World" or Two
   b. Friction in U.N.
   c. The Occupied Countries
8. The strategic areas of our time
   a. The Balkans
   b. Sinkiang
   c. Korea
   d. La Plata
   e. The Baltic
   f. Suez

Readings:

Bradley, *op. cit.*, parts of Chapters XVI thru XXII.
Langsam, *The World Since 1914*
Benns, *Europe Since 1914*.
Hayes, *Political and Cultural History of Europe*, Vol. II.
Wallbank and Taylor, *Our Civilization, Past and Present*, Vol. II.
Schwarzschild, *Primer of the Coming World*
Schwarzschild, *World in Trance*
Willkie, *One World*
O'Rourke, *op. cit.*, Chapter 20, "Democracy vs. Totalitarianism," pp. 467-479.
West, Merideth, Wesley, *op. cit.*, parts of Chapters II, VII and VIII.
any late edition United States History (high school)
any late edition "World History" (high school)
the current newspapers and periodicals, especially *Newsweek, Time, United States News, Life* (parts of it), *The Christian Science Monitor, The New York Times, The Manchester Guardian.*
World Almanac
Statesman's Yearbook
United Nations Yearbook
Raisz, *Atlas of Global Geography*, pp. 57-59 especially.
Goode's School Atlas, pp. 26-45, economic maps; pp. 8-9, world population.

A Suggested Time Schedule

First day. Teachers may wish to introduce the unit by a discussion following the viewing of a film, a current events period, or by the use of a short lecture (largely from Mackinder) on the general nature of Geopolitics; distribution of syllabi and reference directions; formation of committees; a discussion of current world problems.

Second day. Use of films and individual and wall maps to illustrate practical geopolitical principles; assignment of a map making project on Mackinder's thesis for all; presentation of a list of special projects; reports (oral) on the readings thus far accomplished.

Third day. The first individual reports (about three); discussions of group problems and/or achievements; presentation of additional references if needed; discussion meetings by individual groups if the local circumstances will justify this.

Fourth day. More individual reports; discussion of the various geopolitical theories; oral check on the progress in voluntary readings; discussion by the whole class of the relationship of some geopolitical principles to current world affairs.

Fifth day. Group reports (panel discussion better than reports by individual members); teacher's evaluation of individual and group work so far.

Sixth day. Remaining group reports; discussion of individual problems on the projects; Mackinder map due; "current events."

Seventh day. Correlation with world history as commonly taught—the geopolitics of the "have not" countries—discussion led by the teacher or a selected class member; discussion of materials for the quiz of the following day; disposal of questions posed by the readings.

Eighth day. Short objective quiz (allow 25-30 minutes). Discussion of the answers to quiz questions: the teacher explains the basis for the selection of certain questions. (This test has been based largely on the mechanics of Geopolitics and on the generally required readings.)

Ninth day. All individual projects due; return of the quiz papers with an explanation of the "curve." (The teacher's evaluation of the work of each student will, however, be based largely on the individual project and group work rather than on the "quiz.") A symposium on the general worth and scope of the unit by group chairmen or selected individuals; a restatement of the general over-all objective; comments or questions from the rest of the class relative to the completeness or incompleteness of the symposium as conducted by the chairmen.

A List of Individual and Group Projects

1. Dynamic biographies of geopolitical figures (oral or written).
2. A demonstration of the geographical areas held by the six leading nations pre-war and post-war.
3. An evaluation of American expansion as Geopolitics.
4. Tracing the influence of raw materials on the behavior of selected nations.
5. Making azimuthal maps illustrating the fact that no nation is more than sixty hours flying time from another today.
6. A debate on the subject colonial imperialism.
7. The relation of the size of armed forces, with geopolitical position of selected countries.
8. An explanation of the population density of the European peninsula.
9. A panel discussion of the four freedoms in their relation to world unity.
10. Reviews of books other than those listed above, *e.g.*,
    Emeny, *The Strategy of Raw Materials*
    Fairgrieve, *Geography and World Power*
    Renner, *Human Geography in the Air Age*
    Weigert-Stefansson, *Compass of the World*
    Holmes, *Strategic Materials and Natural Strength*
11. Stories of press correspondents abroad or articles or books by Walter Duranty, John Gunther, Maurice Hindus, Edgar Snow, Owen Lattimore, William Shirer, Eric Sevareid, etc., reviewed orally or as essays.
12. A discussion of civil rights under totalitarian regimes.
13. A discussion of the dictatorships of Latin America.
14. Making an economic or political map of the U.S.S.R.

15. A demonstration of reasons underlying the geographical locations of the world's ten largest cities.
16. The construction of graphs of various kinds illustrative of the economic position of nations. (See those especially which accompany articles in the *United States News*.)
17. Drawing of cartoons to illustrate geopolitical ideas.
18. Write a short history of the Geopolitical Institute.
19. An explanation, geopolitically, of the American occupation during World War II of Iceland and Greenland.
20. A discussion of the relationship between the rise of political leaders such as Hitler, Mussolini, and Stalin and the geopolitics of their respective countries. And dozens of others to be selected by students or teacher, preferably students who are attracted to them in the progress of their individual or group studies.

EDITORIAL NOTES AND NEWS

The California Council of Geography Teachers has become a very strong and effective organization. Numerous other outstanding states will be compelled to meet severe competition. The organization issues a *News Letter* and has prepared a program for its annual meeting in May that would compare favorably with a meeting of a national organization. We regret that our space does not allow us to publish the full program. State coordinators who would like to learn how California has developed such an effective organization, should communicate with Dr. Lauren C. Post, Secretary, San Diego State College, San Diego.

Pennsylvania has long had very active geographical organizations. The Geography Club of Southeastern Pennsylvania held its recent meeting at the State Teachers College in West Chester. Dr. J. Russell Smith spoke upon "The Geography Hour." An interesting experiment was a student panel that represented various schools of Southeastern Pennsylvania. The subject for discussion was "Would You Prefer Geography and History Taught as Individual or Unified Subjects?"

DR. TREVOR LLOYD of Dartmouth College will spend the coming summer doing field work in Great Britain and Scandinavia. He will spend considerable time in Lapland and in Denmark. Dr. Lloyd is also editor of *Arctic* which is the journal of the Arctic Institute of North America.

The Geography Club of Western Pennsylvania held its meeting April 23 at the University of Pittsburgh. The program included an exhibit of students' work and teaching materials; a demonstration and discussion of the use of motion pictures in the classroom; and an account of a visit to Honduras and Guatemala. The Club issues a regular mimeographed bulletin to its members.

MARY VIOLA PHILLIPS, New Kensington High School, New Kensington, Pennsylvania has prepared a report for UNESCO on her courses in World Geography and Geography of the Americas. This report was prepared at the request of the panel on secondary schools and was discussed at the recent Cleveland meeting.

THE NATIONAL COUNCIL AT WORK

Members of the National Council of Geography Teachers who wish to reserve hotel accommodations for the Thanksgiving meetings at the NCGT conference headquarters, Hotel Cleveland, Cleveland, Ohio may do so any time now by writing to Hotel Cleveland. The management has already reserved for National Council members: 50 single rooms @ $4.00; 25 single rooms @ $4.50; 25 double-bed rooms @ $6.00; 40 twin-bed rooms @ $8.00; 10 twin-bed rooms @ $9.00.

Plans for the NCGT November 25-26 program are well under way. One general session will be devoted to an examination of at least one problem area in each of four continents. At another general session, speakers will discuss teaching problems in the elementary school, the high school, the college, and the university. Outstanding authorities are being chosen for these speaking assignments. Sectional meetings on the program include elementary education, the use of motion pictures in teaching, and Gamma Theta Upsilon. Possibilities for a short field trip are being studied. *Make plans to spend the 1949 Thanksgiving week end, November 25-26, with the National Council of Geography Teachers in Cleveland.*

National Council representatives at the UNESCO Conference in Cleveland, March 31 and April 1 and 2 included Miss Viola Phillips, New Kensington, Pa., Miss Margaret C. Puff, Butler, Pa., and Miss Villa B. Smith, Cleveland, Ohio, chairman of the National Council delegation.

The following additions and changes in state coordinators will bring the list published in the March 1949 JOURNAL OF GEOGRAPHY up to date.

Colorado: Clark Crain, University of Denver, Denver
Georgia: Mrs. Fern E. Dorris, Department of Social Sciences, Georgia State College for Women, Milledgeville
Idaho: Harry H. Caldwell, University of Idaho, Moscow
Maryland: Helen Mixter, 3652 Elm Avenue, Baltimore
Massachusetts: Ada Shawkey, Farmingham State Teachers College, Farmingham
Nevada: Melvin E. Hecht, 1043 Idaho Street, Elko
New Mexico: James Rowen, East New Mexico State College, Portales
North Carolina: J. Sullivan Gibson, University of North Carolina, Chapel Hill
Oregon: Hazel R. Newhouse, 1429 S.W. 14th Street, Portland 1
Tennessee: Lillian Worley, University of Tennessee, Knoxville
Texas: Taylor T. Broun, East Texas State Teachers College, Commerce
Utah: H. Bowman Hawks, University of Utah, Salt Lake City
Vermont: J. Rowland Illick, Middlebury College, Middlebury
Washington: Joseph E. Williams, University of Washington, Seattle 5
Wyoming: Ruth Linder, University of Wyoming, Laramie

Earl B. Shaw, *President*

EDITORIAL NOTES AND NEWS

Volta Redonda, Brazil's huge national steel mill is expected to reach capacity production of 250,000 metric tons of steel yearly by the end of February, 1949. The first steel flowed at the plant on June 23, 1946. A year ago the Volta Redonda was producing 60 per cent of capacity. Brazil's steel production in 1939 amounted to only 114,095 metric tons. According to present estimated returns the 1948 output will reach 475,000 tons. A 45 million dollar Export-Import Bank loan from the United States helped build the mill. The loan is being paid off along with four per cent interest. General Silvio Raulino de Oliveira, Volta Redonda's president, is making plans to triple the mill's output.

It is reported from Washington, D.C., that plans are being made to expand the economic development of Alaska. Present plans call for an extension and improvement of the transportation system by completely rehabilitating the Alaskan Railroad and the construction of a huge road network. Improved transportation is designed not only to tap storehouses of resources but also to encourage basic industries to locate in Alaska—such as pulp and paper plants.

Today we hear a lot about atomic energy, but how many people realize that uranium is the sole source of this energy. Before the atomic bomb was dropped over Japan, few Americans had heard of atomic energy or uranium. During the last one hundred years, pitchblende, derived from vein type deposits, has been the primary source of the world's uranium supply. Before 1942, uranium was used almost exclusively as a ceramic coloring agent and to provide the by-product radium. For two decades preceding 1942, the world ore produced about 200 tons of uranium per year. Nearly all of this ore came from the Belgian Congo, Canada, Bohemia, and Saxony. Since the development of atomic weapons, the demand for uranium is accelerated greatly. Today, the major pitchblende districts are: 1) The Erzgeberge Region in Saxony and Bohemia, 2) Eldorado Mine, Great Bear Lake, Canada, and 3) Shinkolobwe Mine, Belgian Congo. The Atomic Energy Commission has expressed a deep desire that "independent geologists and private capital undertake the broadest possible program for the exploration and development of new sources of uranium bearing ores."

Today a modern airliner can fly you to the Philippines in less than thirty-nine hours.

The Department of Geography at Syracuse announces the appointment of John H. Thompson as Assistant Professor of Geography. Mr. Thompson had his graduate training at the Universities of Colorado and Washington and is currently teaching at the University of Nevada. Mr. Thompson's primary responsibilities will be in the field of economic geography.

An organizational meeting of the Northwest Ohio Section of the Council of Geography was held at Bowling Green State University, March 12, 1949. The meeting was called by Lyle R. Fletcher, vice-president of the Ohio Council of Geography who presided at the business meeting. Miss Villa Smith of Cleveland, secretary of the Ohio Council, served as secretary pro tem. The newly elected officers are: president, Dr. Curtis M. Wilson, University of Toledo; vice-president, Miss Luella M. Coates, Donnell Junior High School, Findlay; secretary-treasurer, Mrs. Hazel Kille, Bowling Green State University. A highly interesting program was provided for the afternoon session.

The Pennsylvania Council of Geography Teachers recently held a meeting in Harrisburg. Students from the junior and senior high schools in Harrisburg, Middletown, Steelton, and York presented "Geography in the Secondary Schools—Why, What, Where —Geography Experiences Necessary in Citizenship Education." Helen V. De Laplane of York, Mrs. Virginia Morrow of Middletown, and J. T. McClintock of Harrisburg accompanied the students. Following the student program, superintendents, high school principals, and other educators discussed some "pitfalls" in present high school situations. Erna Grassmuck Gilland of California, Pennsylvania, guided the discussion. Virginia Schauer, North Hills School District, Pittsburgh Region, reported on the geography phases of the new Pennsylvania State Elementary Course of Study now at the printers—Bulletin 233 B. Later, William Duncan, Millersville State Teachers College, presented a Demonstration and Interpretation of Temperature Charts.

Recently a Chair of Social Geography in the University of London, tenable at the London School of Economics, was established. Professor L. D. Stamp has been appointed to this chair.

DR. NELS A. BENGTSON, N.C.G.T. Coordinator for Nebraska, reports that the Nebraska Council plans to hold its annual state meeting at Lincoln on Friday and Saturday, May 6 and 7, in conjunction with the Nebraska Academy of Science. The State Council will meet independently on Saturday with a forenoon program followed by a luncheon and a short program in the afternoon. On Friday, the State Council's meetings will be held jointly with the Earth Science section of the State Academy.

Approximately 150 teachers attended the geography section of the Oklahoma Education Association which met in Oklahoma City, February 18. The program included discussions on wild life conservation and the use of art in making maps for and by grade school pupils. Officers elected were: chairman, Gordon M. Harrel, East Central State College, Ada; secretary, Doris Howell, Oklahoma A. & M. College, Stillwater; and coordinator, John W. Morris, University of Oklahoma, Norman.

JOHN W. MORRIS, Oklahoma coordinator of the N.C.G.T., reports that the Geography Section of the Southwestern Social Science Association will meet in Hotel Texas, Fort Worth, on Friday and Saturday, April 15-16, 1949. There will be twenty-six papers presented. Most of the geography members of the Southwestern Social Science Association live in Louisiana, Arkansas, Texas, Oklahoma, and New Mexico. Some geographers appearing on the program come from Colorado, Kansas, Missouri, and West Virginia. The officers of the Geography Section are: chairman, John W. Morris, University of Oklahoma; secretary, Virginia Bradley, Southern Methodist University; and editor, Will Chambers, Stephen F. Austin State College.

Our four largest fishing ports are now in California and Massachusetts. In 1948, the leading fishing port was San Pedro, California. Gloucester came next, and San Diego tied for third honors with Boston. In 1948, the United States fish catch was four and one-half million pounds. The amount is less than in former years, but the sale value of the catch set an all time record.

In a recent editorial, Mr. Studebaker, formerly United States Commissioner of Education, wrote, "Geography today is of such paramount importance that all pupils in the high schools should be given definite instruction in economic geography."

EARL PARKER HANSON has assumed new duties as chairman of the Department of Geography, University of Delaware. The University of Delaware is making plans to

strengthen its offerings in geography. The department's research will be integrated with the work of the University's Institute of Inter-American Studies and Research. It is reported that a "contract has been signed with the Office of Naval Research for a report on problems of adaptation to the humid tropics."

The 1949 officers of the Pennsylvania Council of Geography Teachers are: Esther M. Kilheffer, Lancaster, president; Dr. J. Warren Nystrom, University of Pittsburgh, vice-president; Eugenia Baxter, Monongahela R. D. No. 1, secretary-treasurer; and Dr. Frances Hanson, University of Pittsburgh, State Coordinator for the National Council of Geography Teachers and editor of the *Pennsylvania Council Bulletin*.

During the last four months of 1948, steel mills in the United States turned out 23.5 million tons of ingots and castings. Had the mills produced at the same rate thruout the year, the total production would have been 94 million tons or 4 million tons more than the largest wartime total in 1944.

The English Geographical Association will hold its Spring Conference in Liverpool in April, 19-23, 1949.

The Geographical Association Summer School will be held in Northern Ireland at Bangor, County Down, during August, 6-20, 1949.

On January 1, 1949, the city limits of Baton Rouge were officially extended to include thirty-seven square miles of the East Baton Rouge Parish. By such an official action, the population of Baton Rouge increased from about fifty thousand to over one hundred thousand. The capital of Louisiana with over 100,000 people now become one of our country's one hundred largest cities. The growth of this city in the last few decades is attributed primarily to the industrial development of petroleum and sugar refineries. The fact that Baton Rouge is the capital, contains a state university, and is located at the head of deep water navigation on the Mississippi river are also factors contributing to its development.

Los Angeles, whose political limits includes the largest city area in the world, boasts that it is "biggest" in many ways such as housing the world's largest film studios. Its newest claim is that it has the largest and most modern wall-to-wall carpeting plant. Their washable carpeting is made of "thousands of tiny hooked in loops of hard twist cotton yarn per square yard closely woven in a heavy backing and then anchored with plastic."

According to the United States Fish and Wildlife Service, nine and one-half million tons of menhaden were caught in 1948. The fish are caught for their oil and after the oil is extracted, the waste is used primarily as fertilizer.

According to the January, 1949, Reclamation Era (an official publication of the United States Bureau of Reclamation), waterpower development in Alaska is essential in order to increase the flow of export raw materials. The potential hydroelectric power of Alaska is large. In southeastern Alaska alone, there are some thirty major potential hydroelectric power sites which have a potential continuous capacity of more than 300,000 kilowatts. Fortunately, these water power sites are in the same area as the Tongess National Forest. It is estimated that this forest could supply one-fourth of the present pulp wood market demands of the United States.

GEOGRAPHICAL PUBLICATIONS

Chester R. Longwell, Adolpf and Richard F. Flint. **Physical Geology,** 3rd Edition. 602 pp. John Wiley and Sons, Inc., New York City, N.Y. 1948. $5.00.

The third edition of this well known textbook brings a number of changes in illustrations, deletion of some old material and addition of some new, including a completely new chapter. But tho its physical makeup is more pleasing to the eye, there has not been any extensive reorganization in the subject matter or its presentation.

Most of the line drawings and block diagrams have been redrawn and several new ones added. The use of shading for emphasis in all block diagrams has been most effective. Many of the photographic illustrations have been enlarged by bleeding to the edge of the page, a number of the poorer photographs have been replaced by more suitable material, and good new ones included. The discussion of soils has been enlarged and improved by the addition of a section on types of soils and their relation to climate as a determining factor. The chapter on seismology also has been expanded and brought up to date, as have been the bibliographies at the end of several chapters.

Chapter II, "The Methods and Scope of Geologic Study," is completely new to the text. Its two-page discussion of the scientific method should be very illuminating to a beginning student in any science. This reviewer believes, however, that the rest of the chapter, dealing with some of the broader theoretical concepts of geology, namely, the continents and crustal movements, contest between internal and external forces, and the time factor in geology, will not fully be comprehended by a student before completion of a basic course in geology. Presented this early in the book it may merely prove alarming to him.

CHARLES J. VITALIANO

Indiana University

Godfrey M. Elliott, editor. **Film and Education.** 597 pages. Index Philosophical Library, New York. 1948. $4.75.

Film and Education, as its sub-title indicates, is "a symposium of the role of the film in the field of education." Editor Elliott writes that "the book has but one purpose—to present within the useful limits of one volume a comprehensive survey of the present and potential uses of the 16 mm educational motion picture in our modern society." Thirty-seven authors each contributed a chapter. These chapters are organized into five parts under the following titles in order of appearance (the number of chapters in each part is given in parentheses): The Nature of the Educational Film (4); The Educational Film in the Classroom (13); The Educational Film Outside the Classroom (9); The Educational Film Abroad (3); and Administrative Problems and Practices (8).

Twelve of the thirteen chapters in Part II, The Education Film in the Classroom, are devoted to applications of the film to various subjects such as Science, Social Studies, Business Education, and so forth. In addition to Chapter V, the Basic Techniques of Film Use, geographers will be most interested in Chapter VII, Applications of the Film in Science, and Chapter IX, Applications of the Film in the Social Studies. Mr. Hartley, author of the ninth chapter, writes on page 149 that "The geography film should stress the relationship between natural environments and the distribution and activities of man. This includes such ideas as regional concepts, conservational concepts, the analyses and scientific description of landscape, and space concepts such as location and regional size and form."

Classroom and research geographers, who are interested in dissemination of geographic knowledge by audio-visual methods and in the development of geographic skills, and who are too busy to read and analyze all the articles written on the film as an educational tool, will appreciate the concise and practical content of this book.

THOMAS F. BARTON

Indiana University

Preston E. James with the collaboration of Hibberd V. B. Kline Jr. **A Geography of Man.** 630 pp. 239 maps and pictures with 36 additional pages of maps in back of book. Ginn and Co. 1949. $4.75

A Geography of Man is a textbook for college and university students written as an analytic study of the significance of the area differences in population densities on the earth. For the framework of the book Professor James uses an outline consisting of eight groups of natural regions based on the conditions of surface and vegetation.

Following the introductory chapter entitled "Man on the Earth," in which Professor James sets forth his philosophy of geography there are eight chapters entitled The Dry Lands, The Tropical Forest Lands, The Mediterranean Scrub Forest Lands, The Mid-Latitude Mixed Forest Lands, The Grasslands, The Boreal Forest Lands, The Polar Lands, and The Mountain Lands. The concluding chapter is entitled The Industrial Society.

Thruout the text the basic idea is that in order to survive man must establish some workable connection between the human society and the earth resources. Professor James maintains that the earth conditions which he includes in the term "the land" are important in an understanding of the arrangement of the people in the world. He considers the physical environment as neutral and indifferent so far as human problems are concerned. "A land is neither friendly nor unfriendly, except as man has always personified the natural forces about him and given them human attributes. The significance of the physical conditions of the land depends on the attitudes, objectives, and technical abilities of the inhabitants. The more advanced and complex cultures have a great variety of ways of making use of the land; but whatever mode of occupance is practiced, it must form some kind of harmonious connection with the physical earth. The stimulus and the plan for the transformation of the natural scene into one that is genially civilized are inherent in the human culture, the land provides the fundamental materials and patterns of arrangement."

The philosophy of the book is not new; Professor James has previously stated his philosophy in other texts and in numerous magazine articles. It appears to have stood the test of time, altho he is still wrestling with the problem of just how to approach the study of geography. His method of classification appears justifiable because it is one way of partially solving the problem faced by all geographers. His classification is satisfactory for the Dry Lands, and perhaps for the Tropical Forest Lands, but becomes increasingly unsatisfactory in dealing with the more complex regions. Considerable repetition cannot be avoided.

In the appendixes there are four sections, dealing with topics that are ordinarily woven thruout the main body of other texts. There are sections on: A. Maps; B. The atmosphere; C. The Lithosphere; D. The Hydrosphere. The section on maps is a contribution of Professor Kline. Unfortunately, there is no section treating earth-sun relations and the mathematical aspects of geography.

The maps drawn chiefly by Cartographer Raisz are excellent. Several pages of statistics form a valuable feature of the book. There is an excellent bibliography on

each chapter. Following the bibliography there are thirty-six pages of maps that depict a great variety of items.

The text is well written in a very readable style. One might question whether such statements as "Climate is the average of weather at a particular place and for a particular period" and "after the passage of the sun over the equator" might not be improved. These are minor criticisms of a book that no doubt will pave the way for a more scientific study of geography.

FLOYD F. CUNNINGHAM

Southern Illinois University

NEW PUBLICATIONS

Geographic Approaches to Social Education, edited by Clyde F. Kohn, Nineteenth Yearbook of the National Council for the Social Studies. 1201 Sixteenth Street N.W., Washington 6, D.C. 1948. **$2.50.**

This volume has been in preparation for several years and represents the last word dealing with the contribution of geography to social education. A long list of geographers and others have contributed to the volume. All teachers and administrators will be interested in the point of view presented.

National Parks and Monuments. United States Department of the Interior, National Park Service, Washington, D.C. 1948.

A whole new series of maps and useful information concerning the national parks and monuments of the United States is now being issued by the National Park Service. These pamphlets should be available to students in all of the schools of the country.

Comparative World Atlas, Desk Edition; **American History Atlas; Historical Atlas.** C. S. Hammond & Company, 88 Lexington Avenue, New York, N.Y. 1948. **$.50** each.

Teachers and students will find these small desk atlases highly useful. The cost is low.

Guy Irving Burch and Elmer Pendell. **Human Breeding and Survival.** 138 pp. Penguin Books, Inc. New York. 1947.

Revised edition. Originally published with the title, Population Roads to Peace or War. Challenging statements relative to population limitations.

Morsk Geografisk Tidsskrift. Vol. 7, No. 5-8. **Del Norske Geografiske Selskab,** Oslo, Norway.

This volume commemorates the fiftieth anniversary of the founding of the Norwegian Geographical Society which followed Nansen's pioneer expedition across Greenland on skis. The articles, published in English, French, German, or Norwegian, deal principally with research in polar regions, Norway, Yunan, and the Congo.

NEW PUBLICATIONS

Carlos Monge. **Acclimatization in the Andes.** 130 pp. The Johns Hopkins Press, Baltimore, Maryland. 1948. $2.75.

This volume will be of great interest to geographers concerned with the influence of altitude upon human beings. The study deals with the effects of altitude on human life. He writes that "It can be definitely stated that the Man of the Andes possesses biological characteristics distinct from those of sea-level man." The effects have been traced thru the history of the Inca people. The relationship was recognized by the Inca, both in assigning labor to altitude levels to which they were accustomed, and by punishing criminals by sending them to levels to which they were not accustomed. He has found that the effects, fully recognized by the Incas, continue to the present day but are not adequately recognized by present governmental agencies or by private enterprise.

Earl C. Case and Daniel R. Bergsmark. **College Geography.** 790 pp. Illustrated. John Wiley and Sons, Inc., New York. 1949. $5.00.

This is a new edition of the well-known college text which has been used successfully for many years. The volume has been completely revised and brought up-to-date.

J. Lewis Robinson. **A Regional Bibliography of Articles in the Canadian Geographical Journal, 1930-1947.** The Canadian Geographical Society, Ottawa, Canada. 1947. 50 cents.

All geography teachers will find this bibliography of material appearing in the *Canadian Geographical Journal* of great practical value. The author has compiled the material in accord with a regional classification. It is therefore possible to find all of the articles, which have appeared in the *Canadian Geographical Journal,* dealing with a particular subject, e.g. Alberta.

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NEW PUBLICATIONS

Annals of the Organization of American States. 149 pp. Department of Public Information, Pan American Union, Washington, D.C. 1949.

This is the first number of a new periodical published by the Pan American Union. It will be an official record of all documents pertaining to the Organization of American States which are issued during the quarter. Each official document will be reproduced in full, and the activities of the Organization, the Pan American Union, and the specialized organizations will be reported as well.

C. A. Cotton. **Climatic Accidents in Landscape Making.** 354 pp. Illustrated. John Wiley & Sons, Inc., New York. 1948. $7.00.

Climatic Accidents is a second printing of a very helpful book by Dr. Cotton. The volume contains much material commonly discussed in the first course of college geography in this country. However, it is flavored with considerable geology.

Richard B. Sealock and Pauline A. Seely. **Bibliography of Place Name Literature, United States, Canada, Alaska and Newfoundland.** 331 pp. The American Library Association, Chicago, Illinois. 1948. $4.50.

As the title suggests, this volume deals with a bibliography of the literature of place names. It is arranged by states and provinces. An extensive index makes it possible to locate literature dealing with specific places.

Lowry Nelson. **Rural Sociology.** 567 pp. Illustrated. American Book Company, 88 Lexington Avenue, New York 16, N.Y. 1948. $4.25.

Carl O. Dunbar. **Historical Geology.** 567 pp. Illustrated. John Wiley & Sons, Inc., New York. 1949. $5.00.

As the title indicates this volume presents the history of the evolution of the earth, written in a very interesting style.

The Metric System of Weights and Measures, Twentieth Yearbook of the National Council of Teachers of Mathematics. 304 pp. Bureau of Publications, Teachers College, Columbia University, New York. 1948. $3.00.

The volume discusses the characteristics of the system, the history of its development, and the working of the system in various fields of endeavor and in different countries.

Erwin Raisz. **General Cartography.** McGraw-Hill Book Company, Inc., New York. 1948. $6.00.

This volume is a new edition of the standard volume on cartography by one of America's eminent authorities. All geographers will find the volume of great value. No geographical library should be without it.

Cecil G. Lalicker. **Principles of Petroleum Geology.** 377 pp. Illustrated. Appleton-Century-Crofts, Inc., New York. 1949. $5.00.

This volume will be of particular interest to geographers in giving definite information on the geological structure of oil bearing formations. The volume also deals with the chemical and physical properties of petroleum and survey methods.

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EDITORIAL NOTES AND NEWS

At a recent meeting of American Association of School Administrators, Allison Davis, Professor of Education, University of Chicago, said that children of all social-economic groups have the same average intelligence. He stressed that, "the superiority claimed for children of the higher income group by the older tests holds merely for the narrow problems of the present curriculum. Intelligence tests now place far too high a value on trite academic problems. The tests thus penalize the lower socio-economic groups who do not take school problems very seriously." New tests have been developed at the University of Chicago which contain problems that "rely less on academic concepts and more on reasoning, memory, observation, and creativeness." . . . "For the first time in history of intelligence testing, they have found that on a large proportion of their experimental test problems, children (aged 6 to 8) of unskilled and semi-skilled laborers have an average attainment equal to that of the children of professional groups. They found that there were differences between individuals, but no difference between economic groups."

Brazil is the world's largest producer of castor beans. Most of the beans or castor bean oil comes to the United States, and we rely on Brazil for nearly all of our supply.

The Brazilian National Geographic Council estimates that nearly thirty-six per cent of all Brazilians live in the four southern states of Rio Grande Do Sul, Santa Catarina, Parana and San Paulo, and the Federal District. These states and the Federal District occupy less than one-tenth the area of Brazil. According to the 1940 census, over one million three hundred thousands live in areas with less than one person per square kilometer.

Shoe manufacturing is a rapidly growing industry in Los Angeles. Altho the industry is both young and small when compared with Boston or St. Louis, there are now thirty Los Angeles shoe manufacturers who have both a national distribution and some international business.

According to recent reports from the U.S.S.R., its production of some industrial items was much greater in 1948 than 1947. Altho the amount of production was not given, they have released that over twice as many motor cars, excavators, tractors, tractor-driven plows, tractor-driven seeders, and complex threshing machines were made in 1948 as in 1947.

JOSEPH M. CALDWELL of the Army Beach Erosion Board recently pointed out that American harbor and channel maintenance had cost the taxpayers forty-eight million dollars in the past seven years. This expenditure is approximately one-third of the amount spent for the same purpose during the entire nineteenth century.

DR. RALPH E. YEATTER of the Illinois Natural History Survey recommends well-trained bird dogs for two primary reasons. Good retrievers catch the crippled birds and help the hunter obtain his legitimate bag. Bird dogs are also proving valuable in taking game surveys.

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EDITORIAL NOTES AND NEWS

A new conservation procedure is the use of pine stumps in the southeastern part of our country. The pine stumps, which were left standing when the virgin forest was cut, are now being harvested with bulldozers. Millions of tons of once abandoned stumps, roots, and tops are now being collected in the Atlantic and Gulf Coast States. From the pine roots comes rosin, turpentine, and pine oil. From the stumps and tops comes a great variety of wood products. In 1948, "more turpentine and rosin were extracted from pine stumps and fallen tree tops than was obtained by tapping live pines."

The deepest shaft mines in the world are in the Crown Mine near Johannesburg, Transvaal, Union of South Africa, and the Kolar Gold Fields in the State of Mysore, India. Recently, a young American "photographed the underground workings, being lowered the last two hundred feet in a bucket to the bottom of a shaft nearly 9,000 feet below the surface." Miners in the Crown Mine work close to the 9,000-foot depth.

According to a recent survey, Brazil has 864,000,000 acres of hardwood forests and about 96,000,000 acres of pinewoods in its southern states. If correct, Brazil's lumber-forest area is bigger than the original forest area of the United States.

A research team from the Carnegie Institution of Washington reports that the earth's magnetic field has been about the same for at least one hundred million years.

Tuleremia or "rabbit fever" may become an important factor in decreasing deer hunting. Since the spread of tuleremia, rabbit hunting has decreased rapidly because many former hunters are afraid to dress the rabbits. According to a United States Forest report, rabbits are eating shrubs, bushes, and seedling trees so rapidly that many areas in the Appalachian Mountains are now overbrowsed by deer. There is only so much food, and if the rabbits eat greater and greater quantities, there is less and less for the deer. Consequently, it is possible for rabbits to indirectly reduce deer population. In some areas, hunters must shoot more rabbits if they expect to have better deer hunting.

Ina Cullom Robertson, National Secretary-Treasurer, announces that the following four chapters of Gamma Theta Upsilon have been organized and installed: Omega chapter, State Teachers College, East Stroudsburg, Pennsylvania, Miss Veva Dean, sponsor; Alpha Alpha chapter, North Texas State Teachers College, Denton, Texas, Robert A. Miller and Walter Hansen, co-sponsors; Alpha Beta chapter, Tennessee Agricultural and Industrial State College, Nashville, Tennessee, James K. Anthony, sponsor; and Alpha Delta chapter, University of Miami, Miami, Florida, J. R. Staats and Robert N. Ford, co-sponsors.

Lake Mead, made possible by Hoover Dam, is the largest artificial lake in the world.

"Opportunities in Geography" is a mimeographed leaflet which gives beginning geography students an insight into employment opportunities in teaching, governmental agencies, business, and public and private agencies. Copies of this leaflet can be obtained from Dr. Clifford M. Zierer, Department of Geography, Royce Hall 330, University of California at Los Angeles.

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